Brodie Esq^r with the
Author's Compl^ts

AN ADDRESS

DELIVERED AT

THE ANNIVERSARY MEETING

OF

THE ZOOLOGICAL CLUB

OF

THE LINNEAN SOCIETY,

HELD AT THE SOCIETY'S HOUSE, IN SOHO-SQUARE,

NOVEMBER 29, 1828.

BY JOSHUA BROOKES, ESQ. F.R.S. F.L.S.

SOC. CÆS. NAT. CUR. MOSQ. SOC., &C.

Homo, naturæ minister et interpres, tantum facit et intelligit quantum de naturæ ordine re vel mente observaverit; nec amplius scit, aut potest. NOV. ORG.

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1828.

Meeting of the Zoological Club of the Linnean Society, November 29th, 1828.

"Resolved,—That Mr. Brookes be requested to allow his Address to be printed, for distribution among the Members of the Linnean Society.

E. T. BENNETT, Sec."

ADDRESS.

GENTLEMEN,

IT has now become my gratifying duty, following the laudable custom of my scientific predecessors in this Chair, briefly to chronicle the events and occurrences connected with Zoology, which have taken place in these islands since our last Anniversary, when you were pleased to elect me to fill the honourable station which I am about to resign into your hands. In venturing upon the path marked out by their example, I shall endeavour to pursue their footsteps with the least possible deviation; as by taking such a course, I have good reason to feel assured that my detail will be found not altogether fruitless.

Taking a cursory glance at the magnitude of the science of Zoology, comprehending as it does every object that possesses even the most minute portion of animal life, exhibiting every grade of size from the huge mammoth and the lofty giraffe to the microscopic monad, every variety of form of which such dissimilar bodies are susceptible, and instincts as variable as those forms, and which, to judge from all that we yet know on the subject, are far beyond the boasted scope of human

intellect,—it is obvious that, to render our investigations useful, an arrangement must be formed *in limine*.

The principles of this arrangement, which have only of late years been sought after with an ardour and a zeal commensurate with the importance of the subject, may now be considered as founded on a firm and immutable basis, established by observation and experience, and illumined by reason and philosophy.—Gentlemen, it would be an act of supererogation on my part, and a mockery of your knowledge, to enter into any detail respecting the works on Animals written by Aristotle, Pliny, and other ancient authors, or even to notice further the labours of those illustrious Naturalists who, although long mouldered into dust, still live in posthumous fame!

I cannot, however, on the present occasion omit a passing tribute to the memory of the great man, the second centenary of whose nativity we all hope this night to celebrate in a manner worthy of his merits, and of the esteem in which they are universally held. To the light diffused upon zoological science by the writings of our immortal RAY, whose comprehensive mind embraced every department of Natural History, and illustrated them all with nearly equal felicity, we are indebted for those clear notions of scientific arrangement, the scintillations of his brilliant genius, on which all our present systems are confessedly founded. If then in later times we cannot produce upon the muster roll of British Zoologists, names which deserve to rank by the side of Linnæus and of Cuvier; we may at least console ourselves with the reflection that both those Naturalists unhesitatingly acknowledge our illustrious countryman their master and their guide.

The progressive advances of Zoology in the arrangement of animated beings in their various classes, orders, genera, &c., and the more accurate investigation of the different organs, by the greater or less development of which zoologists have been enabled to separate, divide, and subdivide them more conformably to nature, are daily and incessantly leading us onwards to the discovery of those affinities by which the members of the several families are connected to each other, and of the analogies which they respectively bear to others, that occupy a more distant place in the system.

To this most desirable consummation, the labours of Linnæus, Brisson, Buffon, Daubenton, Camper, Pallas, Pennant, Lacépède, Wilson, Le Vaillant, Laurenti, Artedi, Bloch, Adanson, Reaumur, DeGeer, Fabricius, Ellis, Müller, and many others amongst the illustrious dead, have in the highest degree contributed; and their example has been followed with a kindred spirit of emulation in the profound researches of the venerable octogenarian Blumenbach, of Cuvier, Lamarck, Temminck, Vieillot, Bonaparte, Say, Latreille, Oken, Rudolphi, and a multitude of other living continental, and transatlantic Naturalists; omitting for the present all consideration of the just claims of many, very many of our scientific countrymen to a distinguished rank in this honourable list.

To some of these claims it will, however, be my province to direct your attention more particularly in narrating the progress of Zoology in the British Islands during the past year; and I feel a patriotic pleasure in the review, in which I am convinced that all my hearers will participate.

First in importance of the general Works devoted

purely to Zoology, which have appeared in this country during the last year, is the Zoological Journal, four numbers of which have been published since I have had the honour of occupying this Chair. Of the merits of that excellent periodical I may not venture to speak in those terms of almost unlimited praise, in which alone I could justly characterize it, placed as I am in the presence of the distinguished Zoologist by whom it is edited,—surrounded also by most of his able co-operators in that laborious but illustrious task. To enumerate the titles alone of the valuable papers which have occupied its pages, would far exceed my present purpose, although to many among them I shall briefly advert in my succeeding observations.

In this place, however, I must notice as appertaining to the general subject of Natural History, the remarks "On Dichotomous and Quinary Arrangements" by Mr. Colebrooke, in which it was attempted almost to demonstrate on mathematical principles, that those arrangements were the most simple, and the *latter* the most natural, that could be propounded: and also the "Reply to some Observations of M. Virey," by Mr. W. S. MacLeay, in which, while successfully defending himself from some charges brought against him, our distinguished colleague has shown how repeatedly affinity and analogy have been erroneously regarded as identical, and even by M. Virey himself, who claims the merit of having long since advanced the views by which Mr. MacLeay has been guided,—views which the Continental Naturalist evidently does not yet comprehend, notwithstanding the perspicuous and convincing manner in which they have been at various times explained.

Here also I must notice the "Contributions to the

British Fauna" by Dr. Johnston; and the valuable papers "On the Zoology of the Caribbean Islands" by the Rev. Lansdown Guilding, which have appeared in the numbers of the Zoological Journal to which I refer. The former of these consist of descriptions of Invertebrate Animals, principally belonging to the Annulose type, most of which are regarded by the author as hitherto undescribed. The latter are chiefly directed to illustrate various Molluscous animals, previously known to Naturalists by their shelly coverings alone: amongst these also many new species are described, and several generic groups are for the first time proposed. In the "*Analecta Zoologica*" of the same reverend author, will be found various useful hints and observations.

Another production, embracing every department of zoology, is the "*Spicilegia Zoologica*" of Mr. J. E. Gray, which was commenced during the present year, and of which one number alone has yet been published. Borrowing his plan, as well as the name, from one of the numerous valuable works of the eminent Pallas, the author has here given specific characters, descriptions, and outline representations of many new, or unfigured objects, from nearly every class of the animal kingdom. Strictly scientific, or perhaps I should rather say, exclusively technical, in its details, such a work, however valuable to the Zoologist, I fear will not excite a lively interest in the general reader. Hence, unless its facts were embodied in the pages of some other publication entirely devoted to zoology alone, it is better to give to them a separate and isolated existence, rather than to bury them in periodicals of mixed science, amongst a mass of other matter with which they are unconnected.

Of a very different character from the preceding are

the " Illustrations of Zoology" by Mr. Wilson, a work which from the elegance of its plates and its typographical execution, no less than from the easy and polished style in which it is written, is calculated to attract even the reader for mere amusement, and to entice him perchance into the acquisition of knowledge, from which, when unadorned, he would unquestionably have been repelled. Knowledge he will gain from the perusal of these " Illustrations," as correctly too, so far as they have yet gone, as from the most sententious aphorisms, for their author is evidently well acquainted with the subjects on which he treats; his descriptions are faithful, and his delineations of the habits of the animals are at once correct and popular. Such works (and they will doubtless multiply with the increasing appetite of the public for scientific information conveyed in a popular form,) cannot fail to increase the number of the cultivators of Natural History: they are as it were the seed of Zoology, of which, though much may be cast into unprofitable places, yet other some shall fall into good ground and bring forth its fruit in due season. With these just claims on general attention, it is to be regretted that Mr. Wilson should have lessened his title to the gratitude of the Zoologist especially, by devoting even a portion of his very limited space, to the illustration of subjects by no means new to science.

There is yet another work of a general nature to which I am compelled to draw your attention. Could we at this time rest satisfied on such a subject with a compilation industriously made from earlier writers, and blended with no inconsiderable share of original observation and description, I should advert in terms of unmixed commendation to the " History of British Animals" by

Dr. Fleming, as to a production superior in almost every respect to all similar ones which had preceded it. But if in a work so comparatively limited in its extent as a British Fauna, it is essential that every description shall be taken from the object in nature to which it relates; that every animal described in it shall be located according to correct ideas of groups, derived from a comprehensive review of the whole of the kingdom, and shall be named with due precaution and reference to the works of others; and that the terminology shall be uniform throughout, and consistent also with the most generally approved usage;—a British Fauna, to the completion of which every Naturalist looks forward with anxious hope, must still be regarded as a desideratum in science.

A local Fauna of a limited district has been furnished to us by the Rev. J. Hogg, in his "Natural History of the Vicinity of Stockton on Tees." Defective in many respects, it is yet of use as indicating several species of exceedingly rare occurrence. It is useful also, as all such works must be, in calling the attention of the but half employed inhabitant of the district investigated, to a new source of employment and pleasure in the contemplation of the natural objects by which he is surrounded.

Such are the works embracing various classes of the Animal Kingdom which have appeared during the present year. I shall now proceed to a rapid enumeration of the principal productions relating to the different departments of Zoology, commencing with the *Mammalia*, the highest in rank among organized beings.

To our native list of *Mammalia* but one addition, so

far as my knowledge extends, has lately been made. It is a new species of Bat, supposed by our colleague the Rev. L. Jenyns, to whom we are indebted for the discovery, to have been hitherto confounded with the *Plecotus auritus*, Geoff. From that species it is distinguished by the comparative shortness of its anterior extremities; and hence its discoverer has assigned to it the trivial name of *brevimanus* in a communication presented by him to this Club, and which will appear in the forthcoming part of the Transactions of the Linnean Society. On the same evening on which the descriptive paper was read, the only specimen of the animal which had then occurred, was exhibited to the members present.

Of exotic *Mammalia* several new species have been described in the Zoological Journal, by our colleagues Mr. Vigors and Dr. Horsfield, who, with a solitary exception, have acted conjointly in this laudable task. Amongst them are, a new species of Gibbon, the *Simia albimana*, differing from that which they regard as the *Lar*, by the white fur which clothes its hands and feet;—the *Cheirogaleus Commersonii*;—two new species of Felis, one of which, the *Felis planiceps*, deviates from the typical form of the genus by the flatness of its head and the elongation and slenderness of its canine teeth;—and the *Sciurus Rafflesii*, a beautiful and very distinctly marked Squirrel, which, in common with nearly the whole of these new animals, formed part of the noble collection made in Sumatra by the distinguished patron of Zoology to whose memory it is dedicated, and was subsequently presented by him to the Museum of that Society which hails him with just pride as its founder. Dr. Horsfield has also added to our catalogues a new species of Mustela,

Mustela Hardwickii, so named in honour of the zealous naturalist by whom it was presented to the Museum of the East India Company.

I have myself had the gratification of submitting to your notice some descriptive remarks "On a new Genus of *Rodentia*" founded on an animal previously imperfectly known as the *Dipus maximus*. Its skeleton was laid before you at one of your meetings, and compared and contrasted with those of numerous other Rodent animals to which it was more or less nearly related. The result of this comparison was the discovery of dentary and osteological characters of sufficient importance to authorize its removal from the group with which it was before associated, and to warrant me in proposing it as the type of a new one. The paper in which this proposition was made will shortly be presented to the members of the Linnean Society in the forth-coming part of their Transactions.

Our indefatigable colleague Mr. Yarrell has illustrated in this room the interesting and singular osteology of that extraordinary and almost unique animal, the *Chlamyphorus truncatus*, Harl., so remarkable by the coat of mail which covers the fur of its upper and of its hinder parts. The skeleton employed by him on that occasion belonged to the Zoological Society, by the permission of the Council of which he was enabled to present to our notice in detail its several parts. The skeleton may now be seen by the side of the stuffed animal from which it was extracted, in the Museum of that Society. The very curious results of the examination to which he subjected it, furnished Mr. Yarrell with materials for a valuable paper which he communicated to the Zoological Journal. Mr. Yarrell has also published in the same pe-

riodical, some remarks on the osteology of the disputed Fennec of Bruce, a skeleton of which is also contained in the Museum of the Zoological Society; and from an individual which died in that Society's Vivarium, he has been enabled to give some interesting notes of a dissection of the Tapir of America.

In a brief but valuable paper contained in the same Journal, Dr. Richardson has published "Short Characters of a few Quadrupeds procured on Captain Franklin's late Expedition," several of which appear to be new to our catalogues, and will probably be more fully described hereafter by that enterprising traveller and able naturalist.

Mr. Grant has communicated to Dr. Brewster's Edinburgh Journal of Science, An account of a living Orang Otang: and interesting notices of the Habits of *Iacchus vulgaris*, *Lemur tardigradus*, a species of *Herpestes*, and other Quadrupeds, have appeared in Mr. Loudon's Magazine of Natural History; a work which will undoubtedly contribute not a little to render the science popular, and to initiate the youthful student by easy and familiar illustrations.

But the most important of the discoveries connected with the natural history of the *Mammalia* which have been made during the present year, is that for which we are indebted to the anatomical investigations of our able colleague Mr. Morgan. The mode in which the suckling of the young of marsupial animals was effected remained an arcanum, until his dissections proved that there existed, in connection with the mammary organ of the Kangaroo, a muscular apparatus, which in conjunction with other peculiarities in the structure of the parts, enabled the mother to eject the nutritious fluid into the

mouth of her attached offspring, while it was yet too feeble to possess itself the power of extracting the milk. In the same valuable paper in which he described to you in detail the whole of these structures, he also pointed out to you some striking differences between the mammary organization of the young and of the suckling kangaroo, and illustrated the whole subject by a series of drawings, to be engraved in illustration of his essay, which also will appear in the forth-coming part of the Linnean Transactions.

The highly interesting discoveries with which his previous inquiries had been rewarded, have induced Mr. Morgan to continue his researches. I am not aware what additional information has been obtained by him; but to his endeavours to procure marsupial animals for investigation we are indebted for the addition to our catalogues of a new species, the *Phalangista gliriformis*, recently described by our colleague Mr. Bell from two living specimens in the possession of Mr. Morgan.

Our native list of Birds has this year received no addition, the *Tringa rufescens*, Vieill., having been noticed by Mr. Yarrell in the course of the preceding twelvemonth. Our colleague has, however, recently described the British specimen which he possesses of that exceedingly rare American bird, which appears indeed to be unique in the state of plumage existing in the individual exhibited to you; and this description will be given in the next part of the Linnean Transactions. The same gentleman has also published in the Zoological Journal, a notice "On the Occurrence of some rare British Birds;" in which, among other information, he shows that the Green-headed Bunting, the *Emberiza chlorocephala*, Gmel., is merely a variety of the *Emberiza hortulana*,

which has itself recently been added to our list. In arriving at this conclusion he has been materially assisted by the examination of the original specimen now in the Newcastle Museum, which by the kindness of Mr. Townshend Fox has been exhibited before you. At the same time were placed on the table other rare birds from the same collection, among which was the Kasarka Duck, *Anas rutila*, Temm., the specimen of which is unique as British. To Mr. Fox we are also indebted for a notice in the Zoological Journal, "On the Appearance of some rare Birds in England."

The continuation of the publication of that noble work the "Illustrations of British Ornithology" by Mr. Selby, has brought that national production nearly to a conclusion. Of its high value I need not speak, much of it having been before the public sufficiently long to have enabled all who are interested in the subject duly to appreciate its merits. Sir W. Jardine's "Illustrations of Ornithology" have also been continued; as have "The Birds of America" by Mr. Audubon,—an immense undertaking, which may now be regarded as certain of success, from the extensive encouragement which it has received, and which alone could have supported it. Several numbers of the edition of the "*Règne Animal*" of Baron Cuvier, by Mr. Griffith, have also appeared, in which it has been attempted to embody in the translation of the text characters of the whole of the species of each group hitherto known.

Amid the pressure of official duties to be discharged in an enervating climate, our talented colleague Mr. W. S. MacLeay has not been unmindful of the claims of science. With other productions of the animal kingdom he has forwarded to England an extensive collection of

the Birds of Cuba, which have furnished to another distinguished colleague, Mr. Vigors, materials for a valuable paper in the Zoological Journal. Another absent friend, that zealous navigator and naturalist Captain King, has also not neglected the study of Zoology. A numerous collection of the animals, and especially of the Birds, of the Straits of Magellan, has been made by him during the voyage of survey in which he is now engaged, and has been transmitted to this country. It has been exhibited to you at your meetings by Mr. Vigors, who illustrated it by his remarks, and pointed out the novelties with which it abounds. Captain King's observations and descriptions have appeared in the Zoological Journal. In the same Journal Sir W. Jardine has published "Observations on *Rhinopomastus* of Dr. Smith, a new genus among the *Promeropidæ*;" in which he describes a new species, the *Rhinopomastus Smithii*, and characterizes the genus: and characters have been given by Mr. Swainson of "Several Groups and Forms in Ornithology not hitherto defined."

In the same Journal also, Mr. J. S. Duncan has undertaken "A summary Review of the Authorities on which Naturalists are justified in believing that the Dodo, *Didus ineptus*, Linn., was a bird existing in the Isle of France, or the neighbouring islands, until a recent Period:" a curious subject, which has been treated by the author in a convincing manner. To Mr. Leadbeater we are also indebted for the exhibition of specimens of twelve new species of birds, descriptions of which have since been submitted to the Linnean Society: and the Prince of Musignano, in a letter addressed to the Secretary of that Society, has noticed the occurrence at sea of a flight of birds composed of several species.

Various anatomical peculiarities of birds have also been pointed out during the present year. Our colleague Mr. Yarrell, to whose meritorious exertions I have so often had occasion to advert, has described in the Zoological Journal "The Use of the Xiphoid Bone and its Muscles in the Corvorant, *Pelecanus Carbo*, Linn." He has also called your attention to the osteology of the *Psophia crepitans*, which he has exhibited to you at one of your meetings, and from the details of which he deduced results as to the position of that bird in the system of Nature, corresponding essentially with those previously arrived at by Mr. Vigors. Mr. Yarrell has also exhibited to you several *tracheæ* which had not previously fallen under his inspection, and has made some general remarks on the muscles of voice in birds, a subject which he proposes to pursue at a future opportunity.

The *Reptilia* have been illustrated chiefly by our able colleague Mr. Bell. He has given in the Zoological Journal "Characters of the Order, Families, and Genera of the *Testudinata*," and has described there "*Hydraspis*, a new Genus of Freshwater Tortoise, of the Family *Emydidæ*." In the same Journal he has also published "Descriptions of Three New Species of Land Tortoises." For the Transactions of the Linnean Society, in the forthcoming part of which it will appear, he has also described a new and very interesting species of *Agama* brought by Mr. Douglas from California, and named by Mr. Bell after the zealous botanist who discovered it. Mr. Gray has published in the Philosophical Magazine, "Some further Remarks on the Genus *Chamæleon*, with the Description of an undescribed Species," the *Chamælco Brookesiana*, the remarkable two-horned spe-

cimen of which in my collection is unique. The Rev. Lansdown Guilding has given to the Zoological Journal a description of the living *Iguana;* and Jameson's Edinburgh Journal contains an account of the habits of a living *Siren lacertina.* On the *Axolotl* of the Mexicans, considered as the type of a new order of Reptiles, I have had the honour of submitting to you a notice, and of also exhibiting to you a dissected specimen of the animal, and of other allied species.

Ichthyology has received some attention among us during the past year. Mrs. Bowdich has undertaken the illustration of "The Freshwater Fishes of Great Britain," in a style of very superior accuracy and elegance. Every representation given in this beautiful production, the publication of which has been already commenced, will be a drawing made and coloured from the living fish. The colours which vanish from our preparations, will thus be effectually and permanently secured. How important this is to the study of the Fishes, need not be pointed out. The same attention to the colours of the living fishes gives its principal value to another publication which has also lately been commenced, by Mr. J. W. Bennett, "The Fishes of Ceylon." Your truly scientific Secretary, Mr. Edward Turner Bennett, has published in the Zoological Journal several articles descriptive of various fishes in the Museum of the Zoological Society: and particularly of a collection formed in the Sandwich Islands by Mr. Frembly, R.N.; interesting not only on account of the novelty of the species contained in it, but also because most of them, although essentially inhabitants of the seas, actually become naturalized in fresh or nearly fresh water. Our colleague Mr. Yarrell has controverted in the same

Journal, the generally received opinion of the "Identity of White-bait and Shad," and has shown, by fully entering into the history of each, and particularly by the dates of their appearance respectively, that the former is not, as had been supposed, the fry of the latter. He has also shown that the White-bait possesses characters sufficiently marked to authorize us in regarding it as a distinct species, adults of which, evinced by the existence of roes, are in his collection.

Dr. Hancock also in the Zoological Journal, in some "Notes on Fishes from Demerara, presented to the Zoological Society," has noticed the existence in one species of the very unusual habit of progression on land; and has described two as makers of nests, and watching and tending the spawn which they have deposited. The same paper contains also descriptions of several new *Loricariæ* and mailed *Siluri*. Mr. Ellis has also given us in Dr. Jameson's Journal, some valuable particulars regarding the history of the Salmon.

The erudite and truly scientific ex-President of the Royal Society, Sir Humphry Davy, Bart., has also published an amusing book denominated "Salmonia," fraught with interesting details on Ichthyology and Entomology, as far as relates to the most exalted department of the art of angling.

The study of the Natural History of the Invertebrated Animals has been pursued with equal zeal by inquirers as numerous and as active as those who have devoted their attention chiefly to the higher orders of animals. The *Mollusca* have been illustrated as to their extraordinary and frequently highly beautiful shelly coverings, by the publication of another number of the useful "Genera of Recent and Fossil Shells," by our colleague

Mr. George Brettingham Sowerby. The same gentleman has also given in the Zoological Journal, characters and descriptions of "The Recent Species of Ovulum." Numerous animals of that class, previously unknown to us, have been described by the Rev. Lansdown Guilding; and Mr. Gray has published in the Philosophical Magazine "A Monograph of the Genus *Teredo* of Linné, with descriptive Characters of the Species in the British Museum," and has also concluded in the Zoological Journal the "Monograph of the *Cypræidæ*," on which he has been long engaged. In the same pages Mr. William Clark has described the animals of three species of *Bullæa*, and our acute colleague Mr. Broderip has characterized several new species of Shells, and has also given some very valuable "Observations on the Animals hitherto found in the Shells of *Argonauta*," a most interesting subject, and one which must still be regarded as enveloped in obscurity, unless indeed it be set at rest, as M. de Férussac states it to be, by the recently published work of Poli, which I regret that I have not been so fortunate as to see.

To Mr. Broderip we are also indebted for some observations on another branch of Zoology. His interesting paper, "On the Habits and Structure of *Paguri*, and other *Crustacea*," will be found in the pages of the Zoological Journal. Our knowledge in this department has been further advanced by the "Zoological Researches and Illustrations" of Mr. Thompson, the original work of an able observer of nature. Of this, but one number has yet appeared, which contains a complete history of the genus *Mysis*, comprehending several species of a singular structure, to which Mr. Thompson has given, from one of their peculiarities, the name of Opossum

Shrimps. It also contains a Monograph of the very curious genus *Zoea;* one of the facts produced in which is most surprising, as tending to show that one at least of the animals of this group is merely the larva state of a species of decapodous *Crustacea.* Mr. Thompson has also succeeded in hatching the eggs of the common Crab, the young of which exhibit a form extremely dissimilar to that of the adult or perfect animal. These discoveries, I need scarcely remark, are utterly at variance with the received opinion, that the *Crustacea* are not subject to a metamorphosis analogous to that of insects, an opinion hitherto regarded almost as an axiom, and so fully relied on as to have formed part of the characters assigned to the group by some of the most eminent Naturalists.

Our colleague Mr. Westwood has added to our knowledge of the habits of the *Arachnida* by "A Note on their Impregnation;" in which he records an observation contradictory of older authorities,—a species of spider having remained long *in coitu*, the male having approached without fear, and having been in no haste to quit his companion.

In the more strictly entomological branch of that extensive and interesting department of Zoology which embraces the study of the Annulose Animals, much has been done during the past year. The commencement of the "Descriptive Catalogue of the Lepidopterous Insects contained in the Museum of the Honourable the East India Company," by our colleague Dr. Horsfield, affords a happy example of what may be effected by minute investigation, when applied to the purposes of philosophical combination. In the first part of that truly valuable work, (a work which deserves the encourage-

ment of every lover of Science,) our worthy and industrious friend has advanced a general system of arrangement for the *Lepidoptera*, which corresponds essentially in the quinary number and circular succession of the groups, with that propounded by our absent and respected colleague Mr. W. S. MacLeay, and illustrated by him throughout the whole of the larger masses into which the animal kingdom is most readily divisible. The tribes and stirpes proposed by Dr. Horsfield are chiefly characterized by the peculiarities of the insects while in their *larva* state, a condition of their existence in which insects generally, and especially the *Lepidoptera*, are most active and best fitted for fulfilling those important duties in the system of nature, to which they appear to have been destined by an all-wise Creator. But although the larvæ have in every instance primarily occupied his attention, his researches and observations have been also extensively directed to the other stages of the insect's life, and its peculiarities in each of these have furnished additional characters, confirmatory of the correctness and validity of the principles on which his groups are founded. In their perfect state the *Papiliones* which he has yet described, and those which he has figured, have been examined in detail throughout their various parts, with a minute and indefatigable accuracy which has never been surpassed, and such as could have been devoted with equal advantage to no other collection of exotic insects with which I am acquainted. So perfect indeed, and in many instances so numerous, are the specimens, and so complete are the collections of drawings of their *metamorphoses* which accompany them, that the materials possessed by Dr. Horsfield can scarcely be surpassed even by those which might be employed by the British

Entomologist in illustration of the insects of his native land.

The facilities for the study of British Entomology have continued to increase in a ratio fully equal to that which might have been anticipated from the zeal of the labourers who had already entered on that fertile field. The "British Entomology" of Mr. Curtis, and the "Illustrations of British Entomology" by our worthy Treasurer, Mr. Stephens, are works which would do honour to any country, and will shortly render the Fauna of these Islands more complete as regards the insects indigenous to them, than that of any of the Continental states. Five years have now elapsed since the commencement of the former, and types of nearly 250 genera of indigenous insects have been described and figured in it: few works can therefore compete with it even in its present uncompleted state; and it is already without a rival in the extent, the accuracy, and the number of the anatomical illustrations of those almost all-important organs to the systematist, the *instrumenta cibaria*. The appearance of a second edition of the first number of the "British Entomology," attests at once the public approbation of the work, and the increasing number of students of this delightful branch of natural science. The work of Mr. Stephens, proceeding simultaneously with the two Classes into which the *Insecta* have been divided by Mr. W. S. MacLeay, the *Mandibulata* and *Haustellata*, and arranging each of them systematically, may be regarded as at all times nearly complete to that point of the arrangement to which its publication has taken place. At present it includes the whole of the species known or recorded as British, of the Adéphagous *Coleoptera*, corresponding

with the genera *Cicindela*, *Carabus*, *Dyticus*, and *Gyrinus* of Linnæus; and has proceeded among the *Lepidoptera*, nearly through the *Bombycidæ*, having successively described the indigenous species of the Linnæan genera *Papilio* and *Sphinx*, and being now engaged in the illustration of the *Bombyces*. A change which has been adopted in the mode of publication, has enabled the author to effect considerably more within the period which has already elapsed than he had originally proposed; and the increased rapidity with which it is now given to the world, has authorized him in undertaking to complete his valuable and important work within ten years.

In the study of the generally attractive order of Lepidopterous Insects, the British Entomologist has also received considerable assistance by the completion by our respected colleague Mr. Haworth of his "Lepidoptera Britannica," a local *Species Lepidopterorum* more complete than any which yet exists elsewhere. Circumstances which I need not enumerate have delayed until the present year the appearance of the Fourth Part of this work, which was commenced so long since as 1803. During the interval which has elapsed, knowledge has been advancing, changes have been continually making, and genera especially have been multiplied to an extent which, but for my very limited acquaintance with the subject, I should be inclined to regard as almost unnecessary. Hence the fourth part of the *Lepidoptera Britannica*, which is completed on precisely the same plan with the preceding ones, has to the modern entomologist somewhat of an obsolete appearance. But the sterling value of its excellent descriptions will fully compensate for the apparent deficiency of generic groups,

and will long render the work indispensable to the study of every collector.

In addition to these works on Entomology which have assumed a separate form, several interesting papers have been given to the public. Our colleague Mr. Children, my immediate predecessor in this Chair, has published in the Philosophical Magazine an extremely useful "Abstract of the Characters of Ochsenheimer's Genera of the Lepidoptera of Europe; with a List of the Species of each Genus, and References to one or more of their respective Icones." Our much respected colleague the Rev. William Kirby, who has been engaged during the year in revising a new edition of the truly valuable "Introduction to Entomology," has found leisure to prepare for the Zoological Journal, "A Description of some Coleopterous Insects in the Collection of the Rev. F. W. Hope." Our colleague Mr. Westwood has published in the same Journal, an essay "On the *Chalcididæ*," in which he describes several species and one new genus: and has also given "Observations upon the Genus *Scaphura*, with Descriptions of Two New Species." In the same pages Major General Hardwicke has recorded some curious "Observations on the Loves of the Ants and the Aphides:" Mr. Curtis has given "An Account of *Elater noctilucus*, the Fire Fly of the West Indies:" and Mr. Halliday has published some "Notices of Insects taken in the North of Ireland;" to which was appended a "Note" by Mr. Stephens. The Rev. Lansdown Guilding has presented to the Linnean Society a paper "On *Margarodes*, a new Genus of Insects," containing some very curious particulars respecting the substance known as ground pearl; and another paper, detailing fully the interesting history of *Formicaleo*, and de-

scribing two new species of that genus, which will appear in the forth-coming part of that Society's Transactions.

In the lower departments of the Animal Kingdom but little has been effected among us, and I therefore abstain from encroaching on your time by noticing the few papers in which they have been illustrated. I feel myself indeed called upon to apologize for the length to which my enumeration of the proceedings of the past year has already extended, particularly when I reflect that it can have little of novelty for those whose industrious researches have furnished so considerable a proportion of the information I have adverted to. Yet I trust I may be excused, since to look back upon time well spent is a gratification of the highest order, and I should feel most happy could the humble tribute of my praise be the means of inducing many among you who are fully entitled to it, to enjoy this gratification in its amplest extent.

Yet before I conclude this subject, I must advert to the extraordinary facts which have been recently announced to the world in the "Brief Account of the Microscopical Observations" made by Mr. Robert Brown. That eminent Botanist has discovered the existence of moving molecules of extreme and nearly uniform minuteness, in innumerable substances, whether organic or inorganic. In no substance capable of being diffused in water without solution which he has examined, have these molecules been absent, except in Sulphur, Resin, Wax, and Oil. Could we be justified in attributing the active motion which he has observed to a principle of vitality, these important discoveries would of necessity have been one of the topics on which I should have been bound especially to dwell; but enveloped as its cause

still is in obscurity, I rest satisfied with having called your attention to a fact which bears so immediate a relation to intimate Physics.

To the preceding list I entertain no doubt that additions may be made by those whose attention has been more sedulously directed than my own to the progress of Zoological Science; yet, imperfect as it probably is, it affords a gratifying subject of contemplation. The interest of the subjects corresponds with the number of the productions; and from the activity which has given birth to the latter, we are authorized in concluding, that while materials exist among us, there will not be wanting those who will zealously devote themselves to their illustration. At the present moment we look forward to the speedy publication of that immense mass of valuable information collected in India by Major General Hardwicke, of the importance of which we have been in some measure enabled to judge by those interesting portions which have appeared from time to time in the Linnean Transactions. We also look forward to the appearance of the Natural History Collections formed in North America during the overland expedition under the command of the enterprising Captain Franklin; a work interesting not merely on account of the number and novelty of the subjects to be described in it, and on account of the accuracy to be anticipated from the distinguished Naturalists who have undertaken it, but also for the prospect it holds out of public patronage being at length extended to those sciences which occupy our attention; the Government of this country having liberally devoted a sum of money to complete the illustrations which it is intended to comprise. Proofs of some of these are now upon the table, having been sent to us for exhibition by

our colleague Mr. Swainson, who conducts the Ornithological department.

A new and powerful stimulus has indeed been recently given to the progress of Zoology, by the institution of a Society, the primary object of which is to bring together materials for the study of that science; and ably has this object been hitherto pursued by those who have had the guidance of the affairs of that already numerous and important body. How deeply it is indebted for its success to the unceasing exertions of its talented Secretary is well known to every one amongst you, to whom the abilities and zeal of our colleague Mr. Vigors were familiar while he filled in this Club that office, which he now occupies with so much honour to himself in a more enlarged circle. You have recorded on your Minutes the gratitude you feel towards him; and a deeper debt of gratitude is due for his increased and increasing labours on behalf of the Zoological Society.

Extraordinary and almost wonderful is the progress of the Museum of that Society during the short period which has been occupied in its formation. With it you are all well acquainted. My immediate predecessor in this Chair enumerated in his Address some portion of its contents twelve months ago, and since that time the additions have been most numerous and valuable. It has been enriched by donations from His Majesty, the munificent patron of all useful enterprises; from the Hudson's Bay Company, from Sir Benjamin D'Urban, Dr. Richardson, Captain Lyon, Captain Beechey, Captain Franklin, Captain Friend, and numerous travellers and other individuals who have contributed largely to increase its stores. Already it contains about six hundred specimens of *Mammalia*, four thousand Birds,

one thousand Reptiles and Fishes, one thousand *Testacea* and *Crustacea*, and thirty thousand Insects; a collection worthy of an establishment which may almost be regarded as national, both from the magnitude of its objects, and the warm and extensive support which it has received in various ways from every class of society. Eleven thousand visitors have inspected this collection during the present year; and no less than one hundred and thirty thousand have been admitted to view the Gardens and the Vivarium within the same period. Most attractive and most beautiful have these Gardens become; arranged with taste and judgement, and well supplied, especially by the liberality of the Horticultural Society, with the rarest, the most novel, and the most ornamental plants, they form a delightful promenade; in various parts of which are placed the Pit for Bears, the Llama House, the Beaver's Dam, the Kangaroo Hut, the Aviaries for Hawks, for Owls, and for small birds, and other repositories which have been erected during the past season. In these and in other buildings erected during the preceding year, the visitors have been gratified by viewing about one hundred and thirty quadrupeds, and upwards of three hundred birds, nearly the whole of which are so disposed as to afford them the opportunity of enjoying every approximation consistent with their captive state, to the habits with which they are endowed by Nature. The vast outlay required for these works, for their preservation, and for the care and support of the animals, has been met this year to the extent of 10,000*l.*, partly by the admission of the public, and still more largely by the contributions of the Members of the Society, who already exceed twelve hundred in number.

The Society of which we form a part, although its leading object is the publication of facts and inquiries relating to Natural History, has not been neglectful of the accumulation of materials for study. Various presents have been made to its Museum by individual members, and through the liberality of the members at large we are anticipating a vast addition of the highest interest to both its Museum and its Library. Most important it is to the Linnean Society to possess those books and those collections, on which was based the knowledge of the great restorer of Natural History, whom it has adopted for its patron, and in whose name it glories:— and it has now the opportunity of acquiring them. The Collections, Library, and Manuscripts of Linnæus, including also those of his Son, are now offered to it, and may be secured for it by your liberal donations, and by those of your brethren of our Parent Society. On such an occasion, neither they nor you will be wanting; and we may trust soon to see within these walls those precious stores, valuable for their extent, but invaluable as affording the opportunity of referring from the works of the great systematist of Nature to the type specimens from which his descriptions were drawn.

With them will be added to the possessions of the Linnean Society the Collections and Library of its late esteemed and respected President, whose lamented death has furnished the melancholy occasion of this anticipated transfer. Removed from among us after many years' continuance of that intimate bond of union which taught us to look to him as to the head and founder of our Society, his loss has been as that of a revered and valued friend. Long and dearly will his memory be cherished by us all. His spirit has departed from us, yet

a memorial of his outward form remains; and on the right of the Chair which he occupied whilst living, will his bust be present in imperishable marble at those meetings over which he loved to preside. Imperishable as that marble are the productions of his mind. Of my utter incompetency duly to appreciate them, I am most truly and humbly conscious; it is indeed unnecessary that I should attempt to characterize them in the presence of many who have studied, and who know them; yet I trust I may be permitted to apply to Sir James Edward Smith the eulogium which himself pronounced on our distinguished Ray, in whose botanical steps he most worthily trod, that he was as a Botanist "most accurate in observation, most philosophical in contemplation, and most faithful in description."

Gentlemen,—I now retire from this Chair.—In quitting it, I carry with me a deep impression of gratitude for the kindness with which you have supported me in the office in which your favour placed me. I thank you cordially and respectfully. My best wishes are yours for your individual prosperity; for your continued enjoyment of the pleasures of that science which you so ardently cultivate; and for the advancement of Zoology, and the perpetual addition to your ranks of other students equally devoted to it with yourselves.

THE END.

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